SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT

PROPOSED MODIFICATION TO EXPERIMENTAL FLOWS FROM GLEN CANYON DAM, COLORADO RIVER, ARIZONA

INTRODUCTION

In September 2002 the Bureau of Reclamation, National Park Service and U.S. Geological Survey released an environmental assessment on proposed experimental releases from Glen Canyon Dam and removal of non-native fish from the Colorado River in Grand Canyon. The experiment was developed by the Grand Canyon Monitoring and Research Center (GCMRC, U.S. Geological Survey), cooperating scientists, and the Technical Work Group (TWG) of the Glen Canyon Dam Adaptive Management Program (GCDAMP). It was recommended to the Secretary of the Interior by the Adaptive Management Work Group (AMWG), a Federal Advisory Committee charged with providing input to the Secretary pursuant to fulfilling provisions of the Grand Canyon Protection Act. In December 2002, following public meetings and responses to comments by the federal agencies, the Secretary of the Interior concurred with a Finding of No Significant Impact for the proposed project and agreed that it should move forward.

In January 2003 Reclamation began releases of daily fluctuating flows designed to negatively affect reproduction and recruitment of non-native fish, primarily trout, in the Colorado River below the dam. The objective of this experiment is to reduce the number of non-native fishes that potentially prey on or compete with the federally endangered humpback chub (HBC, *Gila cypha*) in this reach of the river. The primary control mechanisms are: (1) mechanical removal of non-native fish near the confluence of the Little Colorado River and (2) disruption of spawning activities, desiccation of embryos in spawning gravels, and reduced survival of young trout after they emerge from spawning gravels due to displacement from favored habitats in the zone of fluctuation between the daily low (5,000 cfs) and high (20,000 cfs) releases. Non-native suppression releases continued through March 31, 2003, and then were reinstituted on January 1, 2004.

In November 2003 Western Area Power Administration (WAPA) identified to members of the TWG that costs of replacement power exceeded projections identified in the 2002 environmental assessment. WAPA proposed a modified flow regime that would reduce the cost of replacement power by approximately $2 million a month and might still have the desired effects on non-native fish. Their modified flow regime had two components: (1) increasing the duration of maximum release by two hours, from 9 hours to 11 hours each day, during Monday through Saturday and (2) decreasing the fluctuations from 5,000-20,000 cfs to 5,000-8,000 cfs on Sunday. The primary reason for reducing the Sunday fluctuations was to compensate for additional water released during Monday through Saturday. No change in ramping rates (the rate at which releases increase and decrease) was proposed.

The WAPA flow proposal subsequently was discussed in two conference calls of the AMWG and a meeting of the TWG. All meetings and conference calls were open to public participation. WAPA requested GCMRC to compare the effects of the ongoing experimental flow regime and their modified flow regime on Colorado River resources, with emphasis on fine sediments that form beaches in Grand Canyon, the fish food base (algae and invertebrates), non-native fish, and the endangered humpback chub. GCMRC identified that fine sediment transport was expected to increase by 3% under the proposed modification, but that the error in such measurements is ±15%. In other words, the predicted increase in sand export would be statistically indistinguishable from existing flows. Effects on the fish food base and humpback chub were estimated to be small and likely undetectable for similar reasons. GCMRC held that effects on non-native fish likely would be the same or greater than under the flow regime experienced in early 2003. Studies in 2003 suggested that a primary mechanism for disrupting spawning success was the increase in temperature above lethal limits in dewatered spawning gravels (redds). While this would not be as likely to occur on a daily basis in 2004 under the proposed modification as in 2003 (redds would not be dewatered as long), the low flows on Sundays should produce the same or an increased effect.

MITIGATION MEASURES — No negative impacts from the proposed action were identified that would require mitigation. Press releases will be made to the public and boaters and anglers will be advised prior to implementation of the flow change.

ANALYSIS REGARDING WHETHER THE PROPOSED ACTION WILL HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT— As defined in 40 CFR § 1508.27, significance is determined by examining the following criteria:

- Impacts that May Be Both Beneficial and Adverse
- Degree of Effect on Public Health or Safety
- Unique Characteristics of the Geographic Area of the Proposed Action
- Degree of Controversy for Effects of the Proposed Action
- Degree to which Effects of the Proposed Action are Highly Uncertain
- Degree to which the Proposed Action Sets a Precedent for Future Actions with
Significant Effects or Represents a Decision in Principle about a Future Consideration
- Whether the Action is Related to other Actions with Individually Insignificant but Cumulatively Significant Impacts
- Degree to which the Action may Adversely Affect Historic Properties or Cause Loss or Destruction of Significant Cultural Resources
- Degree to which the Action may Adversely Affect Federally Listed Species or their Critical Habitat

- Whether the Action Threatens a Violation of Federal, State, or Local Environmental Protection Law
- Impairment of Park Resources or Values

Each element is discussed as follows:

Impacts that May Be Both Beneficial and Adverse— The proposed modification to experimental flows will not affect environmental justice, National Park Service operations or employee and visitor health and safety. Effects of the proposed modification on biotic communities, Federally listed species and their critical habitats, recreational angling and boating, trout and other non-native fishes, and wilderness resources are not expected to be discernible from effects of the existing experimental flows. The long-term expected outcome of the proposed modification is to benefit native fish, principally the endangered humpback chub. Based on best available information, negative effects, where they occur, are predicted to be minor and temporary.

Degree of Effect on Public Health or Safety— No effects on public health or safety are anticipated from the proposed modification.

Unique Characteristics of the Geographic Area of the Proposed Action —The proposed action will occur within the confines of Glen Canyon National Recreation Area and Grand Canyon National Park. No wild and scenic rivers will be affected by the proposed action. No Indian Trust Assets are found in the project area. Some effects on ecologically critical areas will occur, but the effects are expected to be indiscernible from those under the existing experimental flows. They will be temporary in nature and the long-term effects are expected to be beneficial.

Degree of Controversy for Effects of the Proposed Action— The only controversial aspect of the proposed modification is that the change in flows would occur during the course of an experimental design intended to last for two years. GCMRC, AMWG, and TWG members all acknowledge that it is preferable to maintain an experimental design, but scientists and stakeholders largely agree that, in this case, the reduced costs for hydropower replacement outweigh the effects on scientific investigations.

Degree to which Effects of the Proposed Action are Highly Uncertain—The proposed modification is being carried out as part of the GCDAMP to achieve goals of that program and provisions of the Grand Canyon Protection Act. It is being carried out as an experiment that will be monitored under the auspices of the GCMRC using a science plan developed specifically to assess the proposed action and reviewed by the Science Advisors to the GCDAMP. As an experiment, the proposed action operates on hypotheses constructed from the best available scientific information after years of study by scientific researchers in the Grand Canyon. As with all experiments, this action has

some uncertainty in outcomes; however, the level of uncertainty, particularly given the feedback system to resource managers built into accompanying research and monitoring, does not rise to the level of highly uncertain, unique or unknown risks.

Degree to which the Proposed Action Sets a Precedent for Future Actions with Significant Effects or Represents a Decision in Principle about a Future Consideration—The GCDAMP operates under the principles of adaptive management in which lessons learned by doing, through scientific experiments, are built into present and future management decisions. The iterative approach taken in this process helps to ensure that changes in management direction do not have significant adverse effects on the system and its resources. Neither does any single outcome represent a decision in principle about a future consideration because the outcome of each experiment is added to the knowledge gained in previous experiments in making prospective management decisions.

Whether the Action is Related to other Actions with Individually Insignificant but Cumulatively Significant Impacts—No non-Federal projects were identified as planned, in progress, or completed in the project area. Eight Federal projects, programs, or plans were identified in the environmental assessment for the ongoing experimental flows and are still ongoing at this time. Many of these actions are complementary to the ongoing experimental action in achieving NPS and GCDAMP management objectives; only one was identified as having a minor negative effect on achieving management objectives for the GCDAMP[1], but it does not affect implementation of the proposed modification to experimental flows. Adverse impacts of the proposed modification would be a relatively minor component of the overall minor cumulative impacts.

Degree to which the Action may Adversely Affect Historic Properties or Cause Loss or Destruction of Significant Cultural Resources—There will be no adverse effects to historic properties as a result of implementing the proposed modification.

Degree to which the Action may Adversely Affect Federally Listed Species or their Critical Habitat— Six Federally listed species, three of which have designated critical habitat, occur in the proposed action area. Three of those species, the Kanab ambersnail, humpback chub, and bald eagle received "may affect, likely to adversely affect" determinations in the biological assessment for the proposed action. Identified adverse effects on listed species or their critical habitat are short-term in nature, and long-term consequences of the proposed action are expected to be beneficial. Conservation

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[1] The Colorado River Interim Surplus Criteria EIS identified a slight reduction in the frequency of Beach/Habitat Building Flows from Glen Canyon Dam as a result of implementing interim surplus criteria. Any impacts resulting from the adoption of Interim Surplus Criteria were considered when this proposed action was developed.

measures have been identified for Kanab ambersnail and humpback chub to reduce potential negative effects of the proposed action. The remaining impacts to listed species or their critical habitat are expected to be negligible to minor. No adverse effects to Federally listed species will be exacerbated by the proposed modification, and conservation measures identified for the experimental flows remain in effect.

Whether the Action Threatens a Violation of Federal, State, or Local Environmental Protection Law— The proposed modification violates no federal, state, or local environmental protection laws.

Impairment of Park Resources or Values— The proposed modification is designed to enhance, rather than impair the resources and values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established through the GCDAMP's role in fulfilling provisions of the Grand Canyon Protection Act of 1992. There will be no significant adverse effects to park values from the proposed modification.

PUBLIC COMMENT — Public comment was received through the course of AMWG and TWG meetings and conference calls. All public comments were considered in the determination of effects on the human environment and issues associated with the proposed modification to experimental flows.

DECISION — The proposed modification will not have a significant adverse effect on the human environment. It is designed to reduce costs of hydropower replacement during experimental releases from Glen Canyon Dam and would do so without significant negative effects to sediment transport or interference with actions being taken to improve conditions for the endangered humpback chub. Negative environmental impacts that could occur are negligible to moderate, and are expected to be short term in effect. No significant unmitigated adverse impacts on public health, public safety, threatened or endangered species, historic properties, or other unique characteristics of the region have been identified as a result of analysis of the proposed modification. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the proposed modification will not violate any federal, state, or local environmental protection law.

Based on the discussions among stakeholders in the GCDAMP, the scientific review of the proposed modification by GCMRC, and public comments, a finding of no significant impact is justified for the proposed modification of experimental flows. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

Approved: Rick L. Gold 2/2/04

Rick L. Gold, Regional Director Date
Upper Colorado Region, Bureau of Reclamation

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Intermountain Region, National Park Service

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